

CLAIMS

The invention claimed is:

1. A lock-up device for attaching a print carrier sheet to a cylindrical print
5 roll extending in a longitudinal direction, comprising:
a stationary clip configured to receive a first edge clip attached to a print carrier
sheet;
a locking clip configured for receiving a second edge clip attached to the print
carrier sheet; the locking clip and the stationary clip defining a jaw; and
10 a rack-and-pinion gear mechanism configured to open and close the jaw to
selectively tighten and loosen the print carrier sheet on the print roll.
2. The lock-up device of claim 1, wherein the stationary clip is elongate
and approximately coextensive with the print roll in the longitudinal direction.
- 15 3. The lock-up device of claim 2, wherein the locking clip is elongate and
approximately coextensive with the stationary clip in the longitudinal direction.
4. The lock-up device of claim 1, wherein the rack-and-pinion gear
20 mechanism comprises:
a pinion gear;
a cam strip comprising a toothed rack engaged with the pinion gear;
the cam strip configured to slide in the longitudinal direction in response to
rotation of the pinion gear; and
25 the locking clip slidably engaged with the cam strip and configured to open and
close the jaw in response to longitudinal movement of the cam strip.
5. The lock-up device of claim 4, wherein the stationary clip, the locking
clip and the cam strip are elongate and approximately coextensive with the print roll in
30 the longitudinal direction.
6. The lock-up device of claim 4, wherein the cam strip includes one or
more cam slots oriented at an angle with respect to the longitudinal direction, and the
locking clip comprises one or more pins slidably engaged within each cam slot.

7. The lock-up device of claim 4, further comprising a pawl for selectively locking the pinion gear in one or more selected positions.

5 8. The lock-up device of claim 4, further comprising a spring plunger for selectively holding the pawl in locked and unlocked positions.

9. The lock-up device of 4, configured to fit within a longitudinal slot in the print roll with the jaw substantially flush with an external surface of the print roll.

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10. The lock-up device of 9, wherein the slot has a depth measurement of no more than approximately $\frac{5}{16}$ inches, a width of no more than approximately $1 \frac{1}{2}$ inches, and the jaw has a closing distance of at least approximately $\frac{7}{16}$ inches.

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11. The lock-up device of 9, wherein the slot has a depth measurement of no more than approximately $\frac{5}{16}$ inches, a width of no more than approximately $1 \frac{7}{8}$ inches, and the jaw has a closing distance of at least approximately $\frac{7}{16}$ inches.

12. A lock-up device for attaching a print carrier sheet to a cylindrical print roll extending in a longitudinal direction, comprising:

a stationary clip affixed to the print roll and configured to receive a first edge clip attached to a print carrier sheet;

5 a locking clip slidably supported by the print roll adjacent to the stationary clip and configured for receiving a second edge clip attached to the print carrier sheet; the locking clip and the stationary clip defining a jaw;

a pinion gear pivotally supported by the print roll;

10 a cam strip comprising a toothed rack engaged with the pinion gear and one or more cam slots oriented at an angle with respect to the longitudinal direction;

the cam strip supported by the print roll and configured to slide in the longitudinal direction in response to rotation of the pinion gear; and

15 the locking clip comprising one or more pins slidably engaged within each cam slot and configured to open and close the jaw in response to longitudinal movement of the cam strip.

13. The lock-up device of claim 12, wherein the stationary clip, the locking clip and cam strip are elongate and approximately coextensive with the print roll in the longitudinal direction.

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14. The lock-up device of claim 12, further comprising a pawl for selectively locking the pinion gear in one or more selected positions.

25 15. The lock-up device of claim 14, further comprising a spring plunger for selectively holding the pawl in locked and unlocked positions.

16. The lock-up device of 12, configured to fit within a longitudinal slot in the print roll with the jaw substantially flush with an external surface of the print roll.

17. A cylindrical print roll extending in a longitudinal direction including a lock-up device for attaching a print carrier sheet to the print roll, comprising:

a stationary clip affixed to the print roll configured to receive a first edge clip attached to a print carrier sheet;

5 a locking clip slidably supported by the print roll adjacent to the stationary clip and configured for receiving a second edge clip attached to the print carrier sheet; the locking clip and the stationary clip defining a jaw; and

a rack-and-pinion gear mechanism configured to open and close the jaw to selectively tighten and loosen the print carrier sheet on the print roll.

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18. The print roll of 17, wherein the lock-up device is supported within a longitudinal slot in the print roll with the jaw substantially flush with an external surface of the print roll.

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19. The lock-up device of claim 18, wherein the stationary clip, the locking clip and cam strip are elongate and approximately coextensive with the print roll in the longitudinal direction.

20. A printing machine comprising:
a cylindrical print roll extending in a longitudinal direction; and
a lock-up device supported by the print roll for attaching a print carrier sheet to
the print roll, the lock-up device comprising:

- 5 a stationary clip affixed to the print roll configured to receive a first edge
clip attached to a print carrier sheet,
 a locking clip slidably supported by the print roll adjacent to the
stationary clip and configured for receiving a second edge clip attached to the print
carrier sheet; the locking clip and the stationary clip defining a jaw, and
10 a rack-and-pinion gear mechanism configured to open and close the jaw
to selectively tighten and loosen the print carrier sheet on the print roll.

21. The printing machine of 20, wherein the lock-up device is supported
within a longitudinal slot in the print roll with the jaw substantially flush with an external
15 surface of the print roll.

22. The printing machine of claim 21, wherein the stationary clip, the locking
clip and cam strip are elongate and approximately coextensive with the print roll in the
longitudinal direction.

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23. In or for a printing machine including a cylindrical print roll extending in a longitudinal direction and a lock-up device supported by the print roll for attaching a print carrier sheet to the print roll, the lock-up device, an improvement comprising a rack-and-pinion gear mechanism configured to open and close a jaw to selectively tighten and loosen the print carrier sheet on the print roll.

24. The printing machine of 23, wherein the jaw is supported within a longitudinal slot in the print roll with the jaw substantially flush with an external surface of the print roll.

25. The printing machine of claim 24, wherein the jaw is elongate and approximately coextensive with the print roll in the longitudinal direction.

26. A method for retrofitting a printing machine including a cylindrical print roll extending in a longitudinal direction and a static lock-up frame supported within a longitudinal slot in the print roll for attaching a print carrier sheet to the print roll, comprising the steps of:

removing the static lock-up frame from the slot;

providing a lock-up device configured to fit within the slot, the lock-up device comprising a rack-and-pinion gear mechanism configured to open and close a jaw to selectively tighten and loosen the print carrier sheet on the print roll; and

installing the lock-up device in the slot.

27. The method of claim 26, wherein the step of providing the lock-up device comprises the steps of:

providing a stationary clip configured to receive a first edge clip attached to a print carrier sheet;

providing a locking clip slidably supported adjacent to the stationary clip and configured for receiving a second edge clip attached to the print carrier sheet; the locking clip and the stationary clip defining the jaw; and

providing a rack-and-pinion gear mechanism configured to open and close the jaw to selectively tighten and loosen the print carrier sheet on the print roll.